

chain nodes :

11 24 26 28

ring nodes :

1 2 3 4 5 6 7 8 9 10 12 13 14 15 16 17 18 19 20 21 22 23

chain bonds :

3-26 8-11 11-28 13-28 23-24 24-26

ring bonds :

1-2 1-6 1-10 2-3 3-4 4-5 5-6 6-7 7-8 8-9 9-10 12-13 12-17 13-14 14-15
15-16 16-17 18-19 18-23 19-20 20-21 21-22 22-23

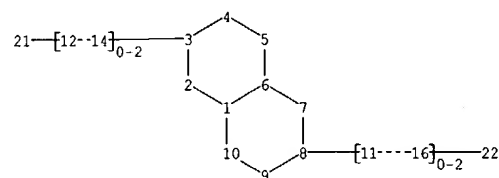
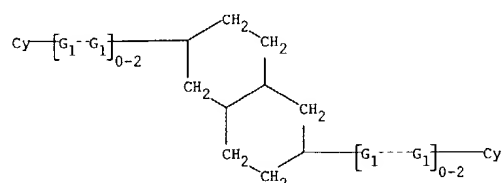
exact/norm bonds :

1-2 1-6 1-10 2-3 3-4 3-26 4-5 5-6 6-7 7-8 8-9 8-11 9-10 11-28 12-13 12-17
13-14 13-28 14-15 15-16 16-17 18-19 18-23 19-20 20-21 21-22 22-23 23-24 24-26

G1:C,O

Match level :

1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom 11:CLASS
12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom 20:Atom 21:Atom
22:Atom 23:Atom 24:CLASS 26:CLASS 28:CLASS



chain nodes :

11 12 14 16 21 22

ring nodes :

1 2 3 4 5 6 7 8 9 10

chain bonds :

3-14 8-11 11-16 12-14 12-21 16-22

ring bonds :

1-2 1-6 1-10 2-3 3-4 4-5 5-6 6-7 7-8 8-9 9-10

exact/norm bonds :

1-2 1-6 1-10 2-3 3-4 3-14 4-5 5-6 6-7 7-8 8-9 8-11 9-10 11-16 12-14 12-21
16-22

G1:C,0

Match level :

1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom 11:CLASS
12:CLASS 14:CLASS 16:CLASS 21:Atom 22:Atom

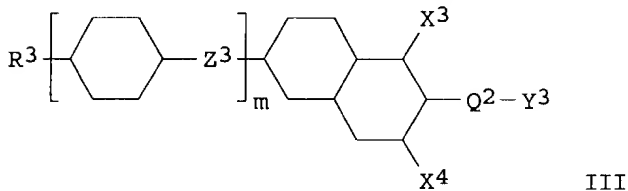
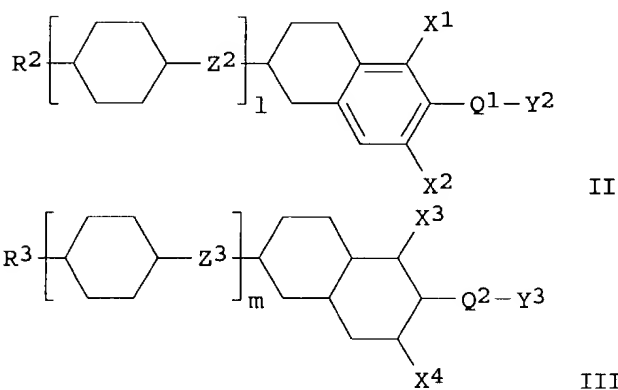
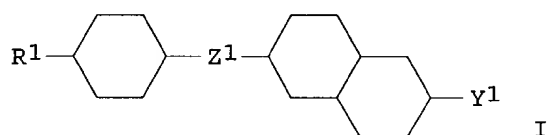
L4 3 L3

=> dis 1-3 all

L4 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2004:159474 CAPLUS
DN 140:207586
ED Entered STN: 27 Feb 2004
TI Active-matrix liquid crystal displays with low drive voltage and nematic liquid crystal compositions therefor
IN Takahashi, Katsutoshi; Takeuchi, Kiyofumi; Kawakami, Shotaro
PA Dainippon Ink and Chemicals, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 16 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C09K019-32
ICS C09K019-42; G02F001-13
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 25, 75

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004059855	A2	20040226	JP 2002-223302	20020731
PRAI	JP 2002-223302		20020731		
OS	MARPAT 140:207586				
GI					



AB The compns. consist of (A) compds. with $\Delta\epsilon$ (dielec. anisotropy) >1.5 and (B) compds. with $\Delta\epsilon$ -1.5 - 1.5 , where A comprise I 2-30, II 2-30, and III 5-50% (R_1 - R_3 = C1-15 alkyl, C2-15 alkenyl; Z_1 - Z_3 = CO₂, OCO, CH₂O, etc.; X_1 , X_2 = H, F, Cl; l , m = 1, 2; Y_1 = OCH₂F, OCHF₂, OCF₃, CF₃; Y_2 , Y_3 = F, Cl; X_3 , X_4 = H, Cl, F; Q_1 , Q_2 = OCH₂, OCF₂, OCHF, CF₂). The compns. may satisfy nematic-isotropic transition temperature 75-120°, crystalline (or smectic)-nematic transition temperature -80-(-10)°, Δn 0.05-0.07, and $\Delta\epsilon$ 4.5-8.0.

ST nematic liq crystal small refractive anisotropy; dielec anisotropy large
nematic liq crystal mixt; active matrix LCD drive voltage minimized

IT Liquid crystal displays

(nematic liquid crystal compns. with large dielec. anisotropy for active-matrix LCD with low drive voltage)

IT Liquid crystals
(nematic; nematic liquid crystal compns. with large dielec. anisotropy for active-matrix LCD with low drive voltage)

IT **663608-65-9**
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(8:mcnematic liquid crystal compns. with large dielec. anisotropy for active-matrix LCD with low drive voltage)

IT 84016-65-9D, mixts. containing 94819-16-6D, mixts. containing 94840-77-4D, mixts. containing 96042-33-0D, mixts. containing 129738-34-7D, mixts. containing 132123-45-6D, mixts. containing 156326-32-8D, mixts. containing 173855-56-6D, mixts. containing 173855-57-7D, mixts. containing 180337-50-2D, mixts. containing 312520-31-3D, mixts. containing 432004-66-5D, mixts. containing 444991-09-7D, mixts. containing 662141-48-2D, mixts. containing 663608-59-1D, mixts. containing 663608-61-5D, mixts. containing 663608-62-6D, mixts. containing **663608-64-8**
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(nematic liquid crystal compns. with large dielec. anisotropy for active-matrix LCD with low drive voltage)

L4 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:793757 CAPLUS
DN 139:299305
ED Entered STN: 10 Oct 2003
TI Nematic liquid crystal compositions having low refractive index anisotropy for active-matrix liquid crystal displays
IN Iwashita, Yoshinori; Takeuchi, Kiyofumi
PA Dainippon Ink and Chemicals, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF

DT Patent
LA Japanese
IC ICM C09K019-42
ICS C09K019-30; C09K019-32; G02F001-13; G02F001-139
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 75
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003286484	A2	20031010	JP 2002-91273	20020328
PRAI	JP 2002-91273		20020328		
OS	MARPAT 139:299305				
GI					

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The compns., showing refractive index anisotropy 0.04-0.08 and dielec. constant anisotropy 3-10, comprise I 10-70, II 3-30, and III 25-50% [R1-R4 = (substituted) C1-10 alkyl, C2-10 alkenyl; L1, L2 = single bond, CH2CH2; X1-X6 = H, F, Cl; Y1, Y2 = F, Cl, CF3, OCF3, OCF2H, OCFH2, NCS; p, q = 0, 1]. The compns. show wide operation temperature region. The liquid crystal displays have twist angles of 0-100° and are operated at low

driving voltage.

ST nematic liq crystal compn active matrix display; twisted nematic LCD active matrix; fluorinated phenyl decahydronaphthalene dicyclohexane nematic liq crystal

IT Liquid crystal displays
(nematic liquid crystal compns. containing prescribed amount of liquid crystal mixts. for active-matrix liquid crystal displays)

IT Liquid crystals
(nematic; nematic liquid crystal compns. containing prescribed amount of liquid crystal mixts. for active-matrix liquid crystal displays)

IT 609809-72-5 609809-73-6
RL: DEV (Device component use); USES (Uses)
(nematic liquid crystal compns. containing prescribed amount of liquid crystal mixts. for active-matrix liquid crystal displays)

L4 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:768063 CAPLUS

DN 137:286604

ED Entered STN: 09 Oct 2002

TI Nematic liquid crystal compositions with stable nematic phase at low temperature and liquid crystal displays using them

IN Iwashita, Yoshinori; Negishi, Makoto; Takeuchi, Kiyofumi

PA Dainippon Ink and Chemicals, Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C09K019-42
ICS C09K019-30; C09K019-32; G02F001-13; G02F001-133; G02F001-139

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 75

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002294236	A2	20021009	JP 2001-99773	20010330
PRAI	JP 2001-99773		20010330		
OS	MARPAT 137:286604				
GI					

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The compns. comprise (A) ≥ 1 compds. selected from RQ1mCHMeCH2Q1nQ2, RQ1mCH2CHMeQ1nQ2, and I (Q1 = p-C6H10; Q2 = 3,5-X-4-Y-Ph; X = F, Cl, H; Y = F, Cl, CF3, etc.; R = C1-10-alkyl; C2-10-alkenyl; m = 1, 2; n = 0-2) and (B) ≥ 1 compds. selected from II, III, and IV [R, X, Y, m = same as above; L = (CH2)2, CH:CH, CO2, OCO, single bond; B = (halogen-substituted) p-phenylene, p-cyclohexylene, 1,2,3,4-tetrahydronaphthalene-2,6-diyl, etc.; p = m; q = 0, 1]. The liquid crystal displays (LCD) show a wide range of working temperature

ST super twisted nematic liq crystal display; STN LCD low temp working

IT Liquid crystal displays
(nematic liquid crystal compns. with stable nematic phase at low temperature for displays)

IT Liquid crystals
(nematic, super-twisted; nematic liquid crystal compns. with stable nematic phase at low temperature for displays)

IT 119990-81-7D, mixture containing 119990-82-8D, mixture containing 129738-34-7D,

mixture containing 131819-23-3D, mixture containing 173855-56-6D, mixture
containing
180779-65-1D, mixture containing 262852-95-9D, mixture containing
325960-56-3D,
mixture containing 344940-53-0D, mixture containing 412323-72-9D, mixture
containing
467226-59-1D, mixture containing 467226-60-4 **467226-61-5**
467226-62-6 467226-63-7 467226-64-8
467226-66-0
RL: DEV (Device component use); USES (Uses)
(nematic liquid crystal compns. with stable nematic phase at low temperature
for displays)